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10/661,159	09/12/2003	Jaime Salvador Vargas	ENDOV-001/US	6784

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PATENT DEPT
INTUITIVE SURGICAL OPERATIONS, INC
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EXAMINER

HOEKSTRA, JEFFREY GERBEN

ART UNIT	PAPER NUMBER
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3736

MAIL DATE	DELIVERY MODE
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09/24/2010

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/661,159	Applicant(s) VARGAS, JAIME SALVADOR	
	Examiner Jeffrey G. Hoekstra	Art Unit 3736	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 24 March 2010.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 18-55 is/are pending in the application.
- 4a) Of the above claim(s) 18-25 and 31-55 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 26-30 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 10 December 2008 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Notice of Amendment

1. In response to the amendment(s) filed on 03/24/2010 and the petition decision mailed on 08/03/2010, amended claim(s) 26 and withdrawn claim(s) 18-25 and 31-55 is/are acknowledged. The current objections and/or rejections is/are *withdrawn*. The following new and/or reiterated ground(s) of rejection is/are set forth:

Election/Restrictions

2. This application contains claims 18, 31-49, and 54-55 drawn to an invention nonelected with traverse and claims 19-25 and 50-53 drawn to an invention without traverse in the reply filed on 12/09/2008. A complete reply to the final rejection must include cancellation of nonelected claims or other appropriate action (37 CFR 1.144) See MPEP § 821.01.

Claim Rejections - 35 USC § 102

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

4. Claims 26 and 28-30 are rejected under 35 U.S.C. 102(b) as being anticipated by Bauerfeind et al. (US 5,337,733, hereinafter Bauerfeind).

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5. For claim 26, Bauerfeind discloses a rigidizing mechanism (14) (as best seen in Figures 1 and 4-6) (column 5 line 5 – column 7 line 33), comprising *inter alia*:

- an inner element (16) (as best seen in Figures 1 and 4-6) (column 5 line 5 – column 7 line 33) and an outer element (18) (as best seen in Figures 1 and 4-6) (column 5 line 5 – column 7 line 33) positioned concentrically around the inner element (as best seen in Figures 1 and 4-6) (column 5 line 5 – column 7 line 33), wherein the inner and outer elements are flexible (as best seen in Figures 1 and 4-6) (column 5 line 5 – column 7 line 33); and
- a plurality of components (32, 36, and 38) (as best seen in Figures 1 and 4-6) (column 5 line 5 – column 7 line 33) positioned between the inner and outer elements (as best seen in Figures 1 and 4-6) (column 5 line 5 – column 7 line 33), each component being distinct from the inner and outer elements (as best seen in Figures 1 and 4-6) (column 5 line 5 – column 7 line 33);
- wherein in a first state (as best seen in Figures 1 and 4-6) (column 5 line 5 – column 7 line 33) the components interfere between the inner and outer elements with a force sufficient to prevent the inner and outer elements from sliding lengthwise relative to one another (as best seen in Figures 1 and 4-6) (column 5 line 5 – column 7 line 33), and in a second state (as best seen in Figures 1 and 4-6) (column 5 line 5 – column 7 line 33) the components do not significantly interfere with the inner and outer elements sliding lengthwise relative to one another (as best seen in Figures 1 and 4-6) (column 5 line 5 – column 7 line 33).

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6. For claim 28. , Bauerfeind discloses a mechanism, wherein the plurality of components comprise balloons (32 and 36) (as best seen in Figures 1 and 4-6) (column 5 line 5 – column 7 line 33).

7. For claim 29, Bauerfeind discloses a mechanism, wherein the plurality of components are energized via air pressure differentials and expanded radially in the first state (as best seen in Figures 1 and 4-6) (column 5 line 5 – column 7 line 33).

8. For claim 30, Bauerfeind discloses a mechanism, wherein the plurality of components are energized via air pressure differentials and contracted radially in the second state (as best seen in Figures 1 and 4-6) (column 5 line 5 – column 7 line 33).

Claim Rejections - 35 USC § 103

9. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

10. Claim 27 is rejected under 35 U.S.C. 103(a) as being unpatentable over Bauerfeind. Bauerfeind discloses the claimed invention, as set forth and cited above, except for expressly disclosing the components comprise an electroactive polymer. It would have been an obvious matter of design choice to a person of ordinary skill in the art to modify the rigidizing mechanism comprising expanding components comprising energized gas/fluid expandable components as taught by Bauerfeind (as best seen in Figures 1 and 4-6) (column 5 line 5 – column 7 line 33) with the electroactive polymer,

because Applicant has not disclosed that the electroactive polymer provides an advantage, is used for a particular purpose, or solve a stated problem.

11. In fact, Applicant disclosure explicitly states (paragraph 67) the following:

"[0067] In another embodiment of the invention, FIG. 22 depicts rigidizing structures including inner and outer concentric tubes, 221 and 222 respectively, separated by short segments of materials 223 that change shape when energized, such as electroactive polymer (EAP), which changes shape when exposed to electric fields. The inner tube 221 may or may not have an open lumen. When employing biaxially active materials such as EAP, the active material components are oriented to contract longitudinally and expand radially when energized. The active material components may be employed in a normally-non-interfering configuration or a normally-interfering configuration. In a normally-non-interfering configuration the active material components 223 are each attached to one of the concentric tubes 221 or 222 such that they do not contact the other tube, as shown in FIG. 20a, when not energized. When energized, the radial expansion of the active material components 223 causes mechanical interference with the other tube, as in FIG. 20b, thus preventing motion between the opposed surfaces 224 and 225 and effectively locking-in the curvature of the rigidizing structure. **According to the present invention, one may substitute materials that change shape when exposed to electric current, magnetic fields, light, or other energy sources. The same rigidizing effect may be achieved by replacing normally- non-interfering active material components 223 with non-interfering balloons expandable by gas or liquid fluid pressure. Alternately, such materials may be placed in a normally-interfering configuration between concentric tubes 221 and 222 such that they interfere, as in FIG. 20b when not energized and contract radially to the state depicted in FIG. 20a when energized.** For example, a normally-rigid structure made stiff by normally-interfering EAP components 223 may be made flexible by applying a voltage to the EAP components such that they contract radially to the non-interfering state depicted in FIG. 20a, relieving the mechanical interference and allowing relative motion between the opposed surfaces 224 and 225 of the concentric tubes 221 and 222. Similarly,

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normally-interfering balloons replacing normally-interfering active material components 223 may be collapsed by applying a relative vacuum."

12. One of ordinary skill in the art, furthermore, would have expected Applicant's invention to perform equally well with rigidizing mechanism comprising expanding components comprising gas/fluid expandable components as taught by Bauerfeind (as best seen in Figures 1 and 4-6) (column 5 line 5 – column 7 line 33), because it provides a first state where the components interfere between the inner and outer elements with a force sufficient to prevent the inner and outer elements from moving relative to one another, and a second state where the components do not significantly interfere between the inner and outer elements (as best seen in Figures 1 and 4-6) (column 5 line 5 – column 7 line 33) and since it appears to be an arbitrary design consideration which fails to patentably distinguish over Bauerfeind. Therefore, it would have been an obvious matter of design choice to modify Bauerfeind to obtain the invention as specified in the claim(s).

Response to Arguments

13. Applicant's arguments filed 03/24/2010 have been fully considered but they are not persuasive.

14. Applicant argues the rejection of the claims under Bauerfeind, specifically arguing Bauerfeind does not disclose, teach, and/or fairly suggest the following:

- each of the plurality of components are distinct from the inner and outer elements;
- first and second states where the components prevent or permit relative sliding lengthwise movement of the inner and outer elements;

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- the plurality of components are balloons;
- the plurality of components are energized and contracted radially; and
- the use of an electroactive polymer is not a design choice because Bauerfeind's support elements are not expandable and Applicant's claimed components act in a different way.

15. The Examiner respectfully disagrees, maintains the rejection as set forth and cited above, and in response notes the following:

16. Initially the Examiner notes that the claims are being treated on the merits with the broadest reasonable interpretation of the plain meaning of the terms therein consistent with the instant disclosure and absent any special definition in the instant Specification upon which Applicant does not appear to rely. As broadly as structurally claimed and as evidenced by Applicant Bauerfeind discloses and teaches the claimed invention and/or the structural equivalent.

17. In response to Applicant's arguments, the Examiner notes Bauerfeind's cited plurality of components (32, 36, and 38) (as best seen in Figures 1 and 4-6) (column 5 line 5 – column 7 line 33) positioned between the inner and outer elements are clearly distinct from the inner and outer elements. In fact Bauerfeind explicitly states at least the following: "support elements 32 arranged at the outside of the inner wall 16 which are each fastened to the inner wall 16 by an annular weld or glue attachment 82 centrally located on each element." (column 6 lines 59-62).

18. In response to Applicant's arguments, the Examiner notes Bauerfeind is expressly concerned with configuring the stiffness of element 14 by evacuating space

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20 to interlock elements 16 and 18 via a radial expansion and/or contraction of support elements 32 and 36. Elements 32 and 36 must be at least "energized" by the fluid pressure differential created by the vacuum in order to rigidize element 14 to prevent movement of elements 16 and 18. The prevented movement may be considered to be either relative longitudinal, e.g. lengthwise movement, or radial movement. Absent any structure and/or limitations to the contrary, the Examiner notes the term "lengthwise" may be fairly and reasonably considered to be either along the longitudinal axis or the radial axis, as both may relate to the "length" of a portion of the device in their respective directions.

19. In response to Applicant's arguments, the term "balloon" may be plainly defined as, for example at least, "a nonporous bag of tough light material that can be inflated. Elements 32 and 36 may fairly and reasonably be balloons as they are polymeric structural elements configured for inflation and deflation via pressure differentials, especially as broadly as claimed.

20. In response to Applicant's arguments, the Examiner notes that the instant Specification clearly states that the use of expansion/contraction of the plurality of components by gas and pressure is equivalent to the use of electroactive polymers because the same rigidizing effect may be obtained. As evidenced by Applicant these are obvious structural variants to obtain the identical functional effect.

21. In response to applicant's argument that the references fail to show certain features of applicant's invention, it is noted that the features upon which applicant relies (i.e., the "support elements are expandable" and/or the "components act in a different or

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particular way”) are not recited in the rejected claim(s). Although the claims are interpreted in light of the specification, limitations from the specification are not read into the claims. See *In re Van Geuns*, 988 F.2d 1181, 26 USPQ2d 1057 (Fed. Cir. 1993).

Conclusion

22. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jeffrey G. Hoekstra whose telephone number is (571)272-7232. The examiner can normally be reached on Monday through Friday 8am to 5pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner’s supervisor, Max Hindenburg can be reached on (571)272-4726. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Jeffrey G Hoekstra/
Examiner, Art Unit 3736